WE CLAIM AS OUR INVENTION:

1. A method for examining responsivity of blood vessels in a patient to a vascular constriction or dilation, comprising the steps of:

producing a localized, controlled temperature change in a body part of a living subject containing body fluid vessels in which a body fluid flow exists and selectively dilating or constricting said vessels; and

measuring said body fluid flow in said vessels after said temperature change dependent on said temperature change.

2. A method as claimed in claim 1 wherein the step of producing a localized, controlled temperature change comprises radiantly heating said body part.

3. A method as claimed in claim 1 comprising producing said vocalized, controlled temperature change with a Peltier element that interacts with said body part.

4. A method as claimed in claim 1 wherein the step of producing a controlled, localized temperature change comprises applying a temperature-adjustable compress to said body part.

5. A method as claimed in claim 4 comprising adjusting a temperature of said compress by flowing fluid through said compress at a selected temperature.

6. A method as claimed in claim 5 comprising storing said fluid in a container attached to said compress.

7. A method as claimed in claim 5 comprising setting said fluid at said selected temperature with a temperature-setting device, selected from the group consisting of heating devices and cooling devices, that interact with said fluid.

8. A method as claimed in claim 5 comprising storing said fluid in different, separate storage containers, and maintaining the fluid respectively stored in said storage containers at different temperatures.

9. A method as claimed in claim 8 comprising selectively causing fluid from one of said storage containers at a time to flow through said compress via a valve connected between said two storage containers and said compress.

10. A method as claimed in claim 5 comprising storing said fluid in a storage container to said compress via feed line and a return line, and circulating said fluid between said compress and said container via said feed line and said return line.

11. A method as claimed in claim 5 comprising employing a fluid selected from the group consisting of water and oil as said fluid in said compress.

12. A method as claimed in claim 5 comprising employing a fluid that is inert for magnetic resonance tomography as said fluid in said compress.

13. A method as claimed in claim 5 comprising employing fluorinated carbon as said fluid in said compress.

14. A method as claimed in claim 5 comprising regulating the temperature of said fluid with a regulating device that interacts with said fluid, selected from the group consisting of heating regulators and cooling regulators.

15. A method as claimed in claim 5 comprising measuring a temperature of the body part using a temperature sensor.

16. A method as claimed in claim 15 comprising measuring said temperature over time for obtaining a temperature curve with respect to time.

17. A method as claimed in claim 5 comprising controlling flow of said fluid through said compress with an external imaging device in which said body part is disposed, selected from the group consisting of magnetic resonance tomography devices and x-ray computed tomography devices.

18. A method as claimed in claim 5 comprising forming said compress of a material that is compatible for magnetic resonance tomography.

19. A method as claimed in claim 18 comprising forming said compress of polytetrafluoroethylene.

20. A method as claimed in claim 5 comprising employing a cuff as said compress.

21. A method as claimed in claim 1 wherein the step of producing a controlled, localized temperature change comprises applying a plurality of compresses respectively at different sides of said body part and flowing a temperature-adjustable fluid through said plurality of compresses.

22. A method as claimed in claim 1 comprising measuring said fluid flow in said body part using magnetic resonance tomography.

23. A method as claimed in claim 1 comprising measuring said fluid flow in axial sections of said body part.

24. A method as claimed in claim 1 comprising measuring said fluid flow in said body part using time-of-flight magnetic resonance angiography.

25. A method as claimed in claim 1 comprising measuring said fluid flow in said body part using phase contract angiography.

26. A method as claimed in claim 1 comprising administering a contrast agent to a patient possessing said body part before measuring said fluid flow in said body part, and measuring said fluid flow in said body part using an imaging modality with which said contrast agent is detectable.

27. A method as claimed in claim 1 comprising measuring said fluid flow in said body part using x-ray computed tomography.

28. A method as claimed in claim 1 comprising measuring said fluid flow in said body part using digital subtraction angiography.

29. A method as claimed in claim 1 comprising, from the measurement of said fluid flow in said body part, calculating a cross-sectional area of a blood vessel in said body part in which said fluid flows.

30. An arrangement for examining responsivity of fluid-carrying vessels in a body part of a patient by producing a vascular constriction or dilation of said vessels, comprising:

a compress adapted to be placed on a body part containing vessels in which a body fluid flows, said compress having a temperature-adjustable fluid flowing therein;

a setting device disposed in interactive relation with said fluid in said compress for setting a temperature of said fluid in said compress to cause a temperature change in said body part for constricting or dilating said vessels; and

a measuring device for measuring flow of said body fluid in said vessels in said body part after said temperature change, dependent on said temperature change.

31. An arrangement as claimed in claim 30 comprising a storage container for said fluid flowing through said compress, connected to said compress via a feed line.

32. An arrangement as claimed in claim 30 wherein said setting device is selected from the group consisting of heating devices and cooling devices.

33. An arrangement as claimed in claim 32 comprising a storage container for said fluid in said compress connected to said compress via a feed line, and wherein said setting device interacts with said fluid in said container, and is selected from the group consisting of heating devices and cooling devices.

34. An arrangement as claimed in claim 30 wherein said setting device is a Peltier element.

35. An arrangement as claimed in claim 30 comprising a first storage container for said fluid in said compress and a second storage container for said fluid in said compress, said first and second storage containers being connected to said compress via respective feed lines, and wherein said setting device sets a temperature of the fluid in said first storage container to be different from a temperature of the fluid in said second storage container.

36. An arrangement as claimed in claim 35 comprising a valve connected to said respective feed lines of said first and second storage containers, for selectively causing fluid from one of said first and second storage containers at a time to flow in said compress.

37. An arrangement as claimed in claim 30 comprising a storage container for said fluid in said compress, connected to said compress via a feed line and a return line for circulating said fluid between said storage container and said compress.

38. An arrangement as claimed in claim 30 wherein said fluid in said compress is selected from the group consisting of water and oil.

39. An arrangement as claimed in claim 30 wherein said fluid in said compress is comprised of a material that is inert for magnetic resonance tomography.

40. An arrangement as claimed in claim 39 wherein said fluid is a fluorinated carbon compound.

41. An arrangement as claimed in claim 30 wherein said setting device comprises a controller for alternatingly heating and cooling said fluid in said compress, for alternatingly dilating and constricting said vessels in said body part.

42. An arrangement as claimed in claim 41 comprising a temperature sensor disposed at said compress, and adapted to interact with said body part, for recording a temperature of said body part.

43. An arrangement as claimed in claim 42 wherein said controller comprises a memory for storing a plurality of recorded temperatures of said body part over time as a temperature curve with respect to time.

44. An arrangement as claimed in claim 30 wherein said measurement device is selected from group consisting of magnetic resonance tomography systems and x-ray computed tomography systems.

45. An arrangement as claimed in claim 30 wherein said compress is composed of a material that is compatible with magnetic resonance tomography.

46. An arrangement as claimed in claim 45 wherein said material is polytetrafluoroethylene.

47. An arrangement as claimed in claim 30 wherein said compress is a first compress, and comprising at least one further compress, said first compress and said at least one further compress being adapted for placement at respectively different sides of said body part.

48. An arrangement as claimed in claim 30 wherein said compress is a cuff.